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APPLICATION NUMBER	FILING DATE	FIRST NAMED APPLICANT	ATTORNEY DOCKET NO.
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08/588,484 01/18/96 THUNDAT T 2240-7141

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B5M1/1023

EXAMINER

FIELDS, C

ART UNIT

PAPER NUMBER

2506

S

DATE MAILED:

10/23/96

This is a communication from the examiner in charge of your application.  
COMMISSIONER OF PATENTS AND TRADEMARKS

**OFFICE ACTION SUMMARY**

- ☐ Responsive to communication(s) filed on \_\_\_\_\_
- ☐ This action is **FINAL**.
- ☐ Since this application is in condition for allowance except for formal matters, **prosecution as to the merits is closed** in accordance with the practice under *Ex parte Quayle*, 1935 D.C. 11; 453 O.G. 213.

A shortened statutory period for response to this action is set to expire 3 month(s), or thirty days, whichever is longer, from the mailing date of this communication. Failure to respond within the period for response will cause the application to become abandoned. (35 U.S.C. § 133). Extensions of time may be obtained under the provisions of 37 CFR 1.136(a).

**Disposition of Claims**

- ☒ Claim(s) 1-31 is/are pending in the application.
- Of the above, claim(s) \_\_\_\_\_ is/are withdrawn from consideration.
- ☐ Claim(s) \_\_\_\_\_ is/are allowed.
- ☐ Claim(s) \_\_\_\_\_ is/are rejected.
- ☐ Claim(s) \_\_\_\_\_ is/are objected to.
- ☒ Claims 26-31 are subject to restriction or election requirement.

**Application Papers**

- ☐ See the attached Notice of Draftsperson's Patent Drawing Review, PTO-948.
- ☐ The drawing(s) filed on \_\_\_\_\_ is/are objected to by the Examiner.
- ☐ The proposed drawing correction, filed on \_\_\_\_\_ is ☐ approved ☐ disapproved.
- ☐ The specification is objected to by the Examiner.
- ☐ The oath or declaration is objected to by the Examiner.

**Priority under 35 U.S.C. § 119**

- ☐ Acknowledgement is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d).
- ☐ All ☐ Some\* ☐ None of the CERTIFIED copies of the priority documents have been
- ☐ received.
- ☐ received in Application No. (Series Code/Serial Number) \_\_\_\_\_
- ☐ received in this national stage application from the International Bureau (PCT Rule 17.2(a)).

\*Certified copies not received: \_\_\_\_\_

- ☐ Acknowledgement is made of a claim for domestic priority under 35 U.S.C. § 119(e).

**Attachment(s)**

- ☒ Attachment A
- ☒ Notice of Reference Cited, PTO-892
- ☒ Information Disclosure Statement(s), PTO-1449, Paper No(s). 4
- ☐ Interview Summary, PTO-413
- ☐ Notice of Draftsperson's Patent Drawing Review, PTO-948
- ☐ Notice of Informal Patent Application, PTO-152

**- SEE OFFICE ACTION ON THE FOLLOWING PAGES -**

Restriction to one of the following inventions is required under 35 U.S.C. § 121:

I. Claims 1-25, drawn to a method or apparatus for detecting electromagnetic radiation, including nuclear radiation, classified in Class 250, subclass 336.1.

II. Claims 26-31, drawn to a cantilever structure for a radiation sensor, classified in Class 73, subclass 432.1.

Inventions I and II are related as combination and subcombination. Inventions in this relationship are distinct if it can be shown that (1) the combination as claimed does not require the particulars of the subcombination as claimed for patentability, and (2) that the subcombination has utility by itself or in other combinations. (M.P.E.P. § 806.05(c)). In the instant case, the combination as claimed does not require the particulars of the subcombination as claimed because the combination does not require a cantilever substrate coupled to a base and a metal film bonded in confronting relationship to the cantilever substrate. The subcombination has separate utility such as for use in a pressure transducer.

Because these inventions are distinct for the reasons given above and have acquired a separate status in the art as shown by their different classifications restriction for examination purposes as indicated is proper.

During a telephone conversation with Edward Pennington on September 24, 1996 a provisional election was made with traverse

to prosecute the invention of Group I, claims 1-25. Affirmation of this election must be made by applicant in responding to this Office action. Claim withdrawn from further consideration by the Examiner, 37 C.F.R. § 1.142(b), as being drawn to a non-elected invention.

Applicant is reminded that upon the cancellation of claims to a non-elected invention, the inventorship must be amended in compliance with 37 C.F.R. § 1.48(b) if one or more of the currently named inventors is no longer an inventor of at least one claim remaining in the application. Any amendment of inventorship must be accompanied by a diligently-filed petition under 37 C.F.R. § 1.48(b) and by the fee required under 37 C.F.R. § 1.17(h).

The drawings are objected to because a reference sensor is not shown. Correction is required.

Applicant is required to submit a proposed drawing correction in response to this Office action. However, correction of the noted defect can be deferred until the application is allowed by the examiner.

The drawings are objected to under 37 C.F.R. § 1.83(a). The drawings must show every feature of the invention specified in the claims. Therefore, the reference sensor must be shown or the feature cancelled from the claim. No new matter should be entered.

Claims 3-6,12-16,19-21, and 24 are rejected under 35 U.S.C. 112, first paragraph, as containing subject matter which was not described in the specification in such a way as to enable one skilled in the art to which it pertains, or with which it is most nearly connected, to make and/or use the invention. All of the independent claims set forth in the preambles detection of nuclear radiation. However, the above claims appear to be limited to embodiments where the cantilever has a property that changes in response to heat. Nuclear radiation is disclosed as producing damage to the cantilever, rather than producing heat..

Claims 1-25 are rejected under 35 U.S.C. 112, first paragraph, because the specification, while being enabling for detection of optical radiation and nuclear radiation, does not reasonably provide enablement for all types of electromagnetic radiation. The specification does not enable any person skilled in the art to which it pertains, or with which it is most nearly connected, to make and use the invention commensurate in scope with these claims. Electromagnetic radiation encompasses a broad range including microwaves, radio waves, and sound waves. There is no disclosure that would support detection of all types of electromagnetic radiation.

The following informalities in the claims are noted. In claim 19, line 3, on should be one. In claim 21, line 3, surface is misspelled.

Claims 1-25 are rejected under 35 U.S.C. 112, second paragraph, as being indefinite for failing to particularly point out and distinctly claim the subject matter which applicant regards as the invention.

In the preambles of claims 1 and 17, the recitation of detection of electromagnetic and/or nuclear radiation makes unclear the metes and bounds of the claims because nuclear radiation (e.g. gamma rays) is a type of electromagnetic radiation.

In claims 4 and 5, it is not clear if the microcantilever is the same or different from the cantilever set forth in the parent claim.

Claims 3-7, 9, 10 and 12-17 lack proper antecedent basis for the microcantilever.

In claim 8, it is not clear what is meant by a PSD signal.

Claim 22 sets forth a second coating, but no first coating is claimed.

The following is a quotation of the appropriate paragraphs of 35 U.S.C. § 102 that form the basis for the rejections under this section made in this Office action:

A person shall be entitled to a patent unless --

(b) the invention was patented or described in a printed publication in this or a foreign country or in public use or on sale in this country, more than one year prior to the date of application for patent in the United States.

(e) the invention was described in a patent granted on an application for patent by another filed in the United States before the invention thereof by the applicant for patent, or on an international application by another who has fulfilled the requirements of paragraphs (1), (2), and (4) of section

371(c) of this title before the invention thereof by the applicant for patent.

The following is a quotation of 35 U.S.C. § 103 which forms the basis for all obviousness rejections set forth in this Office action:

A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

Subject matter developed by another person, which qualifies as prior art only under subsection (f) or (g) of section 102 of this title, shall not preclude patentability under this section where the subject matter and the claimed invention were, at the time the invention was made, owned by the same person or subject to an obligation of assignment to the same person.

This application currently names joint inventors. In considering patentability of the claims under 35 U.S.C. § 103, the examiner presumes that the subject matter of the various claims was commonly owned at the time any inventions covered therein were made absent any evidence to the contrary. Applicant is advised of the obligation under 37 C.F.R. § 1.56 to point out the inventor and invention dates of each claim that was not commonly owned at the time a later invention was made in order for the examiner to consider the applicability of potential 35 U.S.C. § 102(f) or (g) prior art under 35 U.S.C. § 103.

Claims 1,2,5, and 17 are rejected under 35 U.S.C. § 102(b) as being anticipated by Ruell.

Claims 1,2,4,5,7,11,<sup>(12)</sup>~~12~~,17-19,22 and 23 are rejected under 35 U.S.C. § 102(b) as being anticipated by Foss.

Claims 1,3,6,10,13,17 and 18 are rejected under 35 U.S.C. § 102(e) as being anticipated by Burns et al (see co. 9, line 66+).

Claims 8 and 25 are rejected under 35 U.S.C. § 103 as being unpatentable over Foss.

c6 Foss does not specify use of a laser beam, but it would have been obvious to use such for his interrogation light beam so as to provide a high signal-to-noise ratio. It would also have been obvious <sup>to use</sup> a reference sensor so as to further improve the signal-to-noise ratio.

Claims 9 and 14-16 are rejected under 35 U.S.C. § 103 as being unpatentable over Burns et al since in the absence of criticality, the manner of oscillating the cantilever would have been an obvious design choice. <sup>n</sup>In regard to claim 9, since Burns et al teach measuring a change in a physical property of a cantilever to determine temperature, it would have been obvious that physical changes other than a change in elastic modulus would have been suitable for determining temperature, with the choice depending on cost, amount of complexity, ease of use, and desired accuracy.

Claims 20 and 21 are rejected under 35 U.S.C. § 103 as being unpatentable over Foss.

It would have been obvious that the Foss metal coating need not extend to the base in order to provide a workable device. Use of an insulator would have depended on the type and intensity of the radiation to be detected.

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Claim 24 would be allowable if rewritten to overcome the rejection under 35 U.S.C. 112 and to include all of the limitations of the base claim and any intervening claims.

The prior art made of record and not relied upon is considered pertinent to applicant's disclosure.

Barker Jr. and Halsor et al show other teaching of using a cantilever arrangement to detect electromagnetic radiation.

Any inquiry concerning this communication should be directed to Examiner Fields at telephone number (703) 308-4860.

Fields/jm

Oct. 18, 1996

*Carolyn E. Fields*  
**CAROLYN E. FIELDS**  
**EXAMINER**  
**ART UNIT 256**